Name _____

Practice: For use after Lesson 9.6, Algebra 2 with

The Discriminant

Use the discriminant to determine the nature of the solutions.

1. $x^2 + 7x + 10 = 0$ _____
2. $y^2 - 8y + 2 = 0$ _____
3. $z^2 + 6z + 9 = 0$ _____
4. $x^2 + 5x + 9 = 0$ _____

Describe the relation of the graph of each function to the x-axis.

5. $y = x^2 - 5x + 4$ _____
6. $y = x^2 + 12x + 36$ _____
7. $y = x^2 + 2x + 3$ _____
8. $y = 2x^2 - 13x - 7$ _____

Use the discriminant to determine the nature of the solutions of each quadratic equation.

9. $-5z^2 + 6z - 4 = 0$ _____
10. $-4x^2 - 4x = 1$ _____
11. $(y - 5)(y + 3) = -2$ _____
12. $x(x - 11) + 30 = 0$ _____

Determine the value(s) of k for which there will be just one solution.

13. $x^2 + 10x + k = 0$ _____
14. $9y^2 - 24y + k = 0$ _____
15. $4z^2 - kz + 1 = 0$ _____
16. $x^2 + kx + 49 = 0$ _____

MIXED PRACTICE

Find the value of the discriminant for each quadratic equation. Determine the nature of the solutions. Then solve each equation.

17. $x^2 + x - 12 = 0$ _____
18. $y^2 - 18y + 81 = 0$ _____
19. $3z^2 - 2z = 6$ _____
20. $2x^2 - x = -8$ _____